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The New Triad

by

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## **Biography**

Lt Col Marc A. Peterson is currently serving as a student at Air War College, Maxwell AFB, Alabama. After graduating from Oklahoma State University he earned his commission through Officer Training School, Medina Annex, Lackland AFB, Texas. He began his career as a Personnel Officer then as the Executive Officer for the 21<sup>st</sup> Mission Support Group, Peterson AFB, Colorado. At that time he earned a slot to Undergraduate Missile Training then served as a Missile Combat Crew Commander at F.E. Warren AFB, Wyoming. As a Captain, he crossed over to Spacelift as an Air Force Launch Commander with the Delta Rocket and the 1<sup>st</sup> SLS, Cape Canaveral, Florida. The Air Force then utilized his space and missile expertise through service at the Space Warfare Center, Schriever AFB, Colorado. Maj Peterson was assigned to student status at the Air Command and Staff College, Maxwell AFB, Alabama. Upon completion, he received his MAJCOM experience as the Chief of Doctrine, as well as, Branch Chief duty in AFSPC/A8, Peterson AFB, Colorado. As a Lt Col he was given Deputy Command of the 721<sup>st</sup> Mission Support Group, Cheyenne Mountain AFS, Colorado. He then served in various command and control positions in the 21<sup>st</sup> Space Wing with his last assignment as the Director of Plans and Programs at the 50<sup>th</sup> Space Wing, Schriever AFB, Colorado.

He has received a Masters degree from Lesley University in Human Resource Management and a Masters degree from Air Command and Staff College in the Operational Art and Science of War.

## **No Nukes!**

On April 5, 2009 President Obama introduced his vision of reducing nuclear dangers and overcoming grave and growing threats by seeking the “peace and security of a world without nuclear weapons.”<sup>1</sup> To this end, the Administration seeks to put less emphasis on nuclear weapons in our security policy and thus continue to negotiate mutual reductions in strategic nuclear weapons with Russia, with a goal of further reductions in the future. As stated in the third objective of the 2010 Nuclear Posture Review (NPR), the U.S. must continue “maintaining strategic deterrence and stability at reduced nuclear force levels.”<sup>2</sup> In fact, it is possible to substantially reduce the number of nuclear weapons well below New START numbers and still maintain national security.

Additionally, the U.S. must continue to provide assurance to allies who are covered under the U.S. nuclear deterrence umbrella. More significant reductions are possible through a mindset change regarding the traditional nuclear triad consisting of Intercontinental Ballistic Missiles (ICBMs), Submarine Launched Ballistic Missiles (SLBMs) and nuclear bombers. This paper has four main points to make: (1) A new version of the strategic triad is advantageous in a regime of fewer nuclear weapons; (2) New START counting rules have potential disadvantages for the U.S. nuclear missile force; (3) Nuclear deterrence is enhanced if strategic forces are based on the time tested concepts of dispersal and survivability; (4) A realistically, and fiscally obtainable solution is available to maintain U.S. national security objectives while reducing the number of nuclear weapons. The goal of this paper is not to dispute the POTUS vision of eventually reducing nuclear weapons to zero if that is safe and possible, but to show how a smaller strategic force can be best deployed in the near future.

Critical to a discussion of a new nuclear triad is a common understanding of deterrence, survivability and dispersal. What is the time tested concept of nuclear deterrence?

As originally stated in a 1960s memo by General Thomas Power, then Commander in Chief of Strategic Air Command (SAC), the primary mission of SAC and, undoubtedly, still a key mission of present day United States Strategic Command (USSTRATCOM) “is not one of ‘massive retaliation,’ but the peacetime mission of deterrence – to help maintain an honorable peace by discouraging aggression.”<sup>3</sup> Gen Power added, “Hence, the basic objective of our national policy of deterrence is to keep any potential aggressor convinced that an attack on this country or on any of its allies would result in unacceptable consequences to him. This policy has been successful to the extent that it has prevented an all-out nuclear war to this date.”<sup>4</sup> Since it is difficult to determine an exact threat at an exact time Gen Power went on to suggest planning for the worst possible scenario. In so doing, the U.S. would be better prepared to avert lesser threats.

This concept of nuclear deterrence is arguably as valid today as it was in the Cold War era. Some may say the world is a safer place now that the Cold War has ended, but actually the reverse is true. The number of countries able to devastate the U.S. through nuclear weapons has doubled since the end of the Cold War, and even more states possess or are seeking possession of nuclear weapons technology, not to mention the possible nuclear threat posed by terrorist organizations and other non-state actors.

In order to provide a credible nuclear deterrence the force must be survivable and to make that likely it will be important at lower numbers that it be both mobile and widely dispersed. Survivability is accomplished in two ways. One method is by keeping the location of the

nuclear delivery system unknown. This is called position location uncertainty or PLU.

Nuclear submarines are somewhat fragile vessels, but since the submarines are extremely hard to detect when submerged and out on patrol it is almost impossible to directly target them.

Nuclear bombers, on alert, were set to take off to unknown locations within 15 minutes of notification making them extremely hard to target. Another concept of survivability is to

harden the facility against nuclear blast, an attribute of the ICBM force. Although the ICBM silos and launch control centers can no longer survive a direct hit, they may survive a nearby but off-target detonation. Therefore, an individual silo-based ICBM may not be survivable,

but it is nearly impossible to destroy an entire field of ICBMs at the same time. Dispersal of the forces causes an adversary to guard against fratricide of their own Reentry Vehicles

(RVs). Fratricide necessitates an adversary to attack U.S. missile fields from South to North to minimize debris and subsequent RV fratricide. ICBM fields are laid out in such a way as

to ensure their survivability. Individual silos are far enough away from each other that a detonation on one will not destroy another silo. Yet, these silo-based ICBMs are dispersed so

that not all can be attacked simultaneously, and if the northern most silos were struck first, they would raise a wall of debris blocking subsequent incoming reentry vehicles from

reaching their targets beyond that wall of debris. The only feasible way to attack all 450 silos

in such a group is to do a south to north walk through them. This would provide a response

window for the northern-most U.S. ICBM force, and launching of “on alert” nuclear bombers.

The deterrent to a nuclear first strike by an adversary is to ensure a nuclear response.

Spreading the ICBMs far enough apart requires a nearly impossible targeting and timing

problem for any adversary. Gen Power wrote, “The primary objective of dispersal, as applied

to both manned and unmanned weapon systems, is to increase the target system of a potential

aggressor and thus to lower his confidence that he can hit and destroy all our strike forces simultaneously.”<sup>5</sup> Therefore, land-based and sea-based weapon systems become more survivable when widely dispersed. Although U.S. ICBMs are presently deployed in fixed silo locations their numbers and wide dispersal ensures enough missiles would survive a nuclear first strike by an adversary and still provide a guaranteed nuclear response. Even as the U.S. and Russia reduce their nuclear force numbers, the President, the U.S. military, and Congress all agree that a viable nuclear deterrent is required as long as the nuclear threat remains. To this end Congress and the Department of Defense (DoD) commissioned several studies regarding the U.S. nuclear weapons capability.

A March 2006 Report of the Defense Science Board Task Force on Future Strategic Strike Skills stated, “The DoD has not provided specific direction regarding next-generation strategic strike systems.”<sup>6</sup> Further, “The strategic strike area most at risk is ballistic missiles.”<sup>7</sup> The report recommended, “The Secretary of Defense should direct the Navy and the Air Force -- absent near-term systems development -- to fund advanced development (subsystem design, system prototype development, and testing) to support next-generation system development (which will also restore and maintain the skills base).”<sup>8</sup>

Additionally, the House Armed Service Committee (HASC) depicted the current U.S. strategic posture as similar to that previously advocated by President Clinton who “called for the United States to lead the world in nuclear arms reductions...while at the same time maintaining a nuclear deterrent force that hedged against adverse geopolitical developments.”<sup>9</sup> The HASC hearing report also reiterated the need to maintain “sufficient quantities (of forces) to perform their deterrent tasks.”<sup>10</sup> In summary, the House Armed



Services Committee stated the conditions for eliminating nuclear weapons are not present today, and therefore the U.S. must maintain a viable nuclear deterrent for the near future.<sup>11</sup>

## **U.S. Nuclear Deterrent Force**

Further reductions in nuclear weapons may require force structure changes to maintain deterrent effects. Before constructing a proposed new triad, a baseline understanding is required for each leg of the current triad. According to the Senate Armed Services Committee Hearing Report the triad should remain the same. It further reported each leg of the triad has its own value:

- “The bomber force is valuable particularly for extending deterrence in time of crises, as their deployment is visible and signals U.S. commitment. Bombers also impose a significant cost burden on potential adversaries in terms of the need to invest in advanced air defenses.
- The Intercontinental Ballistic Missile force imposes on a prospective aggressor the need to contemplate attacking only with very large number of nuclear weapons, substantially depleting its forces while ensuring a devastating response by the United States. The force is also immediately responsive in a highly controlled manner. And for the foreseeable future, there is no prospect that a significant portion of the ICBM force can be destroyed by a preemptive strike on the United States by small nuclear powers, including China.
- The Submarine Launched Ballistic Missile force is currently the most survivable, meaning that no attacker could contemplate a nuclear attack on the United States without expecting U.S. retaliation.”<sup>12</sup>

The general theme regarding U.S. nuclear policy is the need to further reduce nuclear weapons without reducing nuclear deterrence capability. Furthermore, any solution should continue to provide assurance to allies, and should “maintain equivalency” with Russia. Rather than follow the status quo regarding the value of each triad leg, a serious review of the perceived benefits is required.

The nuclear bomber force is no longer on “alert.” As a result the benefit of survivability and subsequent dispersal upon take off is no longer assumed, at least until U.S. operational policies change. Although nuclear bombers provide flexibility their responsiveness depends on their alert status. Without being placed on runway alert, nuclear bombers rely on advanced intelligence for their ability to get aloft before being destroyed on the ground. Non-alert planes and crews can not generate with little to no warning, placing their survivability in question. Nuclear bombers are currently stationed at known locations without a responsive state of readiness. A significant argument for the nuclear bombers is the capability they provide as a highly visible demonstration of U.S. commitment by their deployment aloft or to runway alert.

ICBMs present easily targeted, fixed locations. The benefit lies in their constant state of readiness and preparedness to launch within minutes of POTUS direction. ICBM Command and Control (C2) is also the most reliable, least vulnerable C2 of any triad leg. Additionally, the dispersal of the ICBM fields mitigates the problems posed by fixed locations. The ability to conduct an all inclusive, simultaneous strike to every missile site is impossible with current technology.

Nuclear capable submarines are considered very nearly impossible to detect with current technology once widely dispersed at sea. Their extreme stealth adds to the near impossibility of preempting the entirety of U.S. nuclear response capability. This brings us to the key question addressed in this analysis. How can the U.S. determine where reductions in the nuclear force should occur without increasing risk to U.S. national security? To begin to answer that, one must first analyze the New START Treaty provision and their implications for strategic stability.

### **Impact of New START Restrictions**

A brief discussion of START counting rules is helpful for further dialogue. Under the current rules all things are not created equal. Russian negotiators were pressing hard for a continuation of the counting rules similar to those from previous START agreements. Why have the Russians been so interested in enforcing counting rules from the old START? In an article written for the Center for Arms Control and Non-Proliferation, John Isaacs, noted a distinction between counting missiles and bombers. Regarding an example of what was counted, he wrote, “If a Trident missile was tested with eight warheads, all Trident missiles would be counted with eight warheads whether the missile actually carried three, five or eight warheads in reality.”<sup>13</sup>

Isaacs further reported, “Under the Treaty of Moscow the United States counted “operationally deployed” intercontinental ballistic missiles (ICBMs) and submarine-launched ballistic missiles (SLBMs), as well as warheads loaded on heavy bombers or stationed at heavy bomber bases.”<sup>14</sup> This flexibility allowed the U.S. to reduce warhead numbers by removing them from active systems and into storage. Lawson wrote, “Russia officially

opposed the Bush administration's way of counting because it gives the U.S. the ability to quickly increase or 'upload' warheads from its reserve stockpile to ready-to-fire missiles."<sup>15</sup>

New START is a blend between START II and the Moscow Treaty. Each delivery vehicle counts as one.<sup>1</sup> But, each "deployed heavy bomber counts as one warhead toward this limit regardless of whether it is equipped to carry air-launched cruise missiles (ALCMs)."<sup>16</sup> This becomes interesting when taken into account that a B-52H can be armed with up to 20 ALCM-Bs.<sup>17</sup> The B-2 can carry up to 16 B61-7, B61-11, or B83 bombs.<sup>18</sup> Therefore, two bombers armed with 36 nuclear bombs count as two warheads. Why the disparity between bombers and missile systems?

Part of the answer is Russia has significant air defenses. They are highly motivated to keep U.S. offensive capability focused on air frames because Russia has a chance of defending against an air strike, but is practically defenseless against ICBMs and SLBMs. The Russian desire to limit the surprise attack potential "past theirs" has been highly successful so far, by negotiating strict rules on ICBMs and SLBMs while allowing permissive rules for counting air-breathing platforms such as bombers. These limits work both ways and are thought to provide overall crisis and strategic stability. As numbers of such forces are reduced it is still possible to substantially reduce operationally deployed nuclear weapons without jeopardizing national security. This raises the question of how much reduction is reasonable?<sup>2</sup>

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<sup>1</sup> Nevertheless, it is considered by many that nuclear nonproliferation efforts will not succeed in the long run unless the United States and Russia, who own over 90 percent of the world's nuclear weapons, do not also agree to participate in nuclear reductions and limitations. Thus, the trick is to keep the deterrent despite reductions.

<sup>2</sup> The New START Treaty has another wrinkle that will force hard decisions on what weapon systems to maintain. New START places restrictions on the number of delivery systems. The initial goal is to reduce to 800 deployed and non-deployed ICBM launchers, SLBM launchers, and nuclear capable heavy bombers and eventually reduced to

## **Tough Decisions**

Hans Kristensen, Director of the Nuclear Information Project for the Federation of American Scientists said, “Bombers have already been relegated to a limited role in the United States’ day-to-day nuclear posture. Warheads on missiles are the day-to-day deterrence. Bombers are really just a backup.”<sup>19</sup> The “Bomber Mafia” and the U.S. Air Force in general must overcome the emotions evoked by Kristensen’s statement, and understand the real discussion point is not the value of long range bombers, but for the need to continue their nuclear mission. Herein lays the crux of the entire paper. The United States bomber force provides an extremely capable and unmatched conventional capability. The current struggles in Iraq and Afghanistan require extensive conventional support from the U.S. Air Force. Releasing additional bombers, crews, tankers and support to conventional tasks or as a cost-cutting measure in hard times is a prudent decision. Taking the nuclear mission away from the 60 nuclear-equipped bombers reduces the U.S. nuclear launcher total to 786, easily meeting the New START Treaty restriction of 800 and making progress toward the goal to reach 700 launchers. This also allows for a substantial reduction in the nuclear warheads assigned to air breathing platforms based on the treaty counting rules previously discussed. The remaining ICBM and SLBM force would then form a dyad, but the paper is entitled “The New Triad.” The concept of diversification is also important when considering a system of nuclear weapons and their launch vehicles.

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700. According to an article in Defense News, “the United States has 450 intercontinental ballistic missiles based in silos on land and 336 based on submarines. It also has 44 nuclear capable B-52 bombers and 16 nuclear-capable B-2 bombers. That gives the United States a total of 846 launchers. The treaty, ratified by the U.S. Senate in December 2010, permits 800 launchers, but says only 700 can be “deployed.” Simple math identifies 46 launchers too many and potentially 146 launchers too many. The term “deployed” lends itself to further definition during treaty negotiations.

Colin Gray once described the virtues of a diverse U.S. strategic force through the following example:

“To the very limited extent to which a strategic triad of forces provides redundant capabilities, an analogy with elevator safety design features is appropriate. An elevator accident could be so catastrophic for those involved that backup systems to backup systems are provided for safety. No elevator designer is permitted to ask of safety engineering, ‘how little is enough?’ Statistically improbable sequences of events do occur. The designer of strategic forces knows that the potential failure of one element of the triad needs to be insured against by the existence of complementary retaliatory forces in the other triad legs.”<sup>20</sup> He added, “A diverse force structure enhances the survivability of U.S. strategic forces. The dispersal of the U.S. strategic nuclear arsenal among ICBMs, SLBMs and aircraft poses extremely severe, and perhaps impossible, difficulties of attack timing for a first-strike planner...the ICBM force--as always--will be instantly ready to fire.”<sup>21</sup>

In order to conduct a successful first-strike against a diverse, nuclear weapon system an adversary would need to ensure very nearly every adversary delivery system was destroyed simultaneously and without warning to prevent any ability to retaliate in great force.

Currently, time, distance and U.S. missile warning make a first-strike unproductive to all who would attempt such an endeavor. Gray also wrote, “Not only do these individual characteristics necessitate unique attacks to counter a single triad element, they also provide complementary survivability for the triad as a whole.”<sup>22</sup>

Additionally, weapon system diversification provides internal benefits. For example, if a failure or fault occurred, significant enough to cause an entire family of systems (say ICBMs) to be taken off alert, the remaining systems (Bombers and SLBMs) would provide deterrence. Therefore, if one system is down for one reason or another the other two systems would provide deterrent support. If this is so, how then does this position support removal of the U.S. nuclear bomber mission?

Clearly, removal of the nuclear bomber mission would not support diversity and stability unless offsetting measures were adopted in the ICBM and SLBM forces to ensure stability.

However, removing the nuclear bomber mission could provide needed resources to diversify the ICBM force. If the decision is made to eliminate nuclear bombers then the remaining delivery systems must be made even more survivable. Further, despite present and future reductions of nuclear weapon numbers the U.S. strategic forces must ensure U.S. retaliation as long as adversarial nuclear weapons exist. This leads to the conclusion that a portion of the U.S. ICBM force must be deployed on mobile launchers. As far back as the 1960s, adding a mobile facet to ICBMs was highly recommended.

After exploring over 30 possible ICBM basing modes over more than a decade, the Department of Defense eventually decided to put the first Peacekeeper in rail garrison deployment mode, putting them on the public railroad systems across the United States. Testing was conducted and simulated deployment of a mobile rail launcher was also successfully accomplished, but Peacekeepers in rail garrison basing mode were never operationally deployed. Instead, 50 were deployed in silos. It turns out that despite the vast railroad system, launches could only occur at key points in the U.S. due to guidance system calibration, flight distances from launch to target, etc. Even though the rail garrison was mobile and unpredictable, the actual launch sites were predictable and therefore targetable. Much study was conducted regarding deployment of the rail garrison that could be applied to a road mobile force of small ICBMs. In fact, the Rapid Execution And Combat Targeting (REACT) system currently employed in U.S. ICBM Minuteman III (MMIII) Launch Control Centers was originally designed for the rail garrison concept. If the rail garrison is not the answer for ICBM mobility, what then is the answer?

Adding a new ICBM basing mode during fiscally challenging times may seem politically improbable, but this need not be the case. First, the Defense Science Board and then the

House Armed Services Committee both identified the need to develop the next generation ICBM. The future of both ICBMs and the future Triad may be found in work done in the recent past. As far back as 1960 Gen Power stated, “In addition to hardening and dispersal of ICBM sites, SAC is now resorting to another protective tactic--mobility--tests of which began in June 1960. Mobility is a most attractive defense tactic against missile attacks because the probability of destroying a mobile and widely dispersed target with long-range missiles is very small.”<sup>23</sup> Since the life extension program of the ICBM and SLBM force is so successful it would be prudent to pursue transitional technology rather than moving straight toward the next generation missile systems.

### **Recommendation for the “New Triad”**

In the mid 1980s the Air Force was concerned over the growing accuracy of Russian SLBMs that could be launched off the coasts and jeopardize fixed U.S. ICBM locations. At that time the Air Force saw the need for a road mobile ICBM force that deployed a Small Intercontinental Ballistic Missile (SIBM). Martin Marietta was chosen to develop the XMGM-13A Midgetman. It was a single warhead, solid fuel missile capable of flying 6,800 miles.<sup>24</sup> The first prototype successfully launched in 1991. Comparable to the MMIII in performance, it provided a cheaper, light weight, smaller and, therefore, mobile option to the fixed ICBM sites. The Cold War ended and the program was cancelled in 1992 due to budgetary constraints. The main point to understand is that a prototype has already been successfully developed and tested. It would not be necessary to start the research and development from scratch since the R&D program already existed, most of the work was done



and the program could be reenergized as needed. Combined with life extension of the MMIII ICBMs and SLBMs, the Small ICBM in a mobile launch mode could provide a viable option.

A light weight and smaller ICBM also requires a mobile launch vehicle, and this has also been designed and tested. The prototype for the Boeing manufactured small ICBM Hardened Mobile Launch (HML) Vehicle is presently on display at the Hill AFB Museum's Missile Park.<sup>25</sup> The HML is a mobile, radiation-hardened, vehicle designed to transport and launch the MGM-134A Small Intercontinental Ballistic Missile unofficially called the "Midgetman" missile.<sup>26</sup> The HML was described as over 110 feet long and weighed over 239,000 pounds when fully loaded, yet it could travel on paved roads at up to 55 miles per hour. The HML could also travel off-road. It could withstand moderate nuclear effects and the trailer-mounted plow allowed the tractor to bury the launcher-trailer into the ground for additional protection from nuclear blasts.<sup>27</sup> Although the HML vehicle on display is no longer a working model, like the Midgetman missile, the Hardened Mobile Launcher prototype already went through the research and development stage and could be revitalized by contacting Boeing Aerospace and Electronics who also cooperated with Loral Defense Systems Division.

The HML is survivable as a result of hardening and because the adversary could not pinpoint its location. The ability to "dig in" creating a low profile protected on its sides by the earth would cause an adversary's nuclear blast to travel over the HML allowing for a retaliatory strike capability. Pre-survey of multiple launch sites aides in calibrating guidance systems of the Small ICBM. The original concept for the HML was to utilize various bomb ranges since the land was already owned by the federal government, and would also alleviate potentially problematic land use negotiations with local land owners. This is a fine plan, however ranges are also known locations, and provide a focused area that could aid the

targeting options of a determined foe. Therefore, additional basing concepts would prove helpful.

Utilizing existing resources, it is recommended that consideration be given to deploying HMLs from existing ICBM bases. Deployment from ICBM bases would keep HMLs in close proximity to Weapon Storage Areas (WSA), security, maintenance and operational crews familiar with the care and feeding of ICBMs. The expensive Missile Procedures Trainers could also be used to include HML ops crews if the REACT consoles originally designed for the rail mobile mission and currently utilized in the fixed launch control centers were used in the HML redesign. Missile combat crews could be proficient in both and easily transferred between MMIII, and Midgetman deployment duty. Incorporating the REACT consoles into the HMLs would also take advantage of the existing Undergraduate Missile Training conducted at Vandenberg AFB, further taking advantage of a proven training and operating system. Operationally similar systems would also aid Global Strike Command and 20<sup>th</sup> Air Force with standardization of Nuclear Surety Inspections, Combat Capability Inspections and Operational Readiness Inspections. If thought through completely, MMIII and HML similarities could provide operational, maintenance and security synergies while creating the survival through dispersal desired by fielding two separate missile systems.

There is no need to continually argue the value of the ICBM system. In fact the 1983 “bipartisan Scowcroft Commission on Strategic Forces provided an invaluable service by identifying the key issues related to how and why we should modernize U.S. ICBMs and by examining these issues within a comprehensive framework.”<sup>28</sup> The Scowcroft Commission concluded that fixed silo ICBMs should be “complemented by subsequent development of a small mobile ICBM.”<sup>29</sup> A one-for-one swap between HMLs and MMIIIs could start with 50.

Activate a squadron of deployable HMLs and deactivate a squadron of MMIIIs. This paper recommends taking one squadron from two missile wings leaving a deficit of 100 MMIIIs in total (50 from each wing) replacing them with 25 HMLs each. This concept would leave 100 MMIII sites that could be used as “prepared” HML sites in addition to their unknown mobile locations, and would keep the road mobile HML in an environment of nuclear missile experience as previously discussed.

## **Conclusion**

The New START Treaty numbers will drive hard decisions. Both Congressional and DoD studies have confirmed the need to develop a next generation of ICBMs and SLBMs along with revitalizing the nuclear industrial base in the process. The tried and true concepts of survivability, dispersal, and diversity are like laws of physics to the nuclear strategist, and any solution should keep these concepts at the forefront.

Taking nuclear bombers off alert had the affect of reducing their survivability against a bolt from the blue and against an unanticipated surprise attack reducing their responsiveness-- both attributes that made the nuclear bomber a strong and essential leg of the triad. Therefore, the unstated U.S. nuclear strategy is to operate as a dyad with the assumption of ramping up to a triad as needed if time permitted and U.S. intelligence gave enough warning to generate the bomber force to a high state of readiness. Rather than rely on the present triad with its bomber limitations, perhaps it is time to form a “New Triad.”

The compelling argument for the nuclear bomber force was twofold: (1) nuclear bombers could be used as a show of force, and (2) nuclear bombers forced adversaries to spend significant resources on fielded air defenses rather than developing defenses against missiles.

These attributes can be retained by other means. For example, advances in communication and intelligence allow for flushing ICBMs mounted on HMLs and nuclear submarines to send the same “show of force” strategic message as performed by bombers. In addition, the proven capability of the U.S. conventional bomber force will still cause potential adversaries to continue committing vast resources to fielding air defense weapon systems. Eliminating the nuclear bomber mission and converting those bombers to conventional-only status is a logical decision. Doing so frees those bombers for conventional-only missions, but increases the need for the remaining systems to be even more survivable and reliable. The Hardened Mobile Launch vehicles along with the Midgetman provide an affordable and capable system to meet U.S. national security interests and yet also adhere to the New START restrictions. This triad of ICBMs deployed in two basing modes and SLBMs on submarines should provide strategic and crisis stability and avoid the possibilities of surprise attacks.

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<sup>2</sup> "2010 Nuclear Posture Review Report." April 2010, p. iii.

<sup>3</sup> General Thomas S. Power, USAF. "Strategic Air Command," p. 1.

<sup>4</sup> Ibid, p. 1.

<sup>5</sup> Ibid, p. 3.

<sup>6</sup> Defense Science Board. *Report of the Defense Science Board Task Force on Future Strategic Strike Skills*. Independent Task Force Advice to the Secretary of Defense, Washington, D.C.: Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, March 2006, p. 4.

<sup>7</sup> Ibid, p. 5.

<sup>8</sup> Ibid, p. 5.

<sup>9</sup> Committee on Armed Services. *Hearing before the Committee on Armed Services United States Senate*. Congressional Commission on the Strategic Posture of the United States, United States Senate, One Hundred Eleventh Congress, First Session, Washington: U.S. Government Printing Office, May 7, 2009, p. 12.

<sup>10</sup> Ibid, p. 13.

<sup>11</sup> Ibid, p. 38.

<sup>12</sup> Ibid, p. 47.

<sup>13</sup> Isaacs, John. "Center for Arms Control and Non-Proliferation." *Nuclear Weapons Counting Rules Under START I, the Moscow Treaty, and New START*.

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[http://www.armscontrolcenter.org/policy/nuclearweapons/articles/031009\\_counting\\_rules](http://www.armscontrolcenter.org/policy/nuclearweapons/articles/031009_counting_rules) (accessed December 5, 2010), p. 1.

<sup>14</sup> Ibid, p. 2.

<sup>15</sup> Ibid, p. 2.

<sup>16</sup> Ibid, p. 2-3.

<sup>17</sup> U.S. Air Force, *Long Range Strike Aircraft White Paper*, op. cit., p. 20.

<sup>18</sup> Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters, *Nuclear Matters: A Practical Guide* (Washington, D.C.: Office of the Deputy Assistant to the Secretary of Defense for Nuclear Matters, 2008), p. 37.

<sup>19</sup> Ibid.

<sup>20</sup> Dr. Barry R. Schneider, Colin S. Gray, Keith B. Payne. *Missiles for the Nineties, ICBMs and Strategic Policy*. Westview Replica Edition, p. 8.

<sup>21</sup> Ibid, p. 8.

<sup>22</sup> Ibid, p. 9.

<sup>23</sup> Thomas S. Power, USAF. "Strategic Air Command," p. 5.

<sup>24</sup> Parsch, Andreas. "Directory of U.S. Military Rockets and Missiles." *MGM-134*. 2002.

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<sup>25</sup> Hill Air Force Base. "Fact Sheet." *Small ICBM Mobile Launcher*.

<http://www.hill.af.mil/library/factsheets/factsheet.asp?id=5717> (accessed December 7, 2010).

<sup>26</sup> Ibid.

<sup>27</sup> Ibid.

<sup>28</sup> Dr. Barry R. Schneider, Colin S. Gray, Keith B. Payne. *Missiles for the Nineties, ICBMs and Strategic Policy*. Westview Replica Edition, p. 3.

<sup>29</sup> Ibid, p. 3.

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